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CENTRAL INTELLIGENCE AGENCY

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COUNTRY East Germany

SUBJECT Development of a Small Betatron without Iron at the University of Jena

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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

1. On 11 and 12 May 1955, Dipl. Ing. Hense (fnu) and Prof. Dr. Alfred Eckhardt, of the Technical-Physical Institute of the University of Jena, displayed a small iron-free (eisenlos) betatron. The device may be regulated up to 8000 cycles, with 800 amps.,and a pulse voltage (Einschussspannung) of about 1000 volts. The regulating of the power,to a large extent,is dependent on the increase of the voltage.

2. The small calibration in a so-called Siemens X-ray ball and good mobility would make it particularly well-adapted for medical purposes. The switch box (Schaltschrank), used for circulation cooling (Zirkulationskuehlung), as well as for generating and regulating high frequencies, can locate a disconnected assembly through a cable connected with the ray producer.

3. A significant advance in radiation research would be made if the dose power (Dosisleistung) assumed by the young physicist can be increased from 2 to approximately 10 mC (the equivalent of about 8 g. of radium). Hense stressed the point that, after the procurement of the materials still required, such as high-emitting cathodes, etc., the technical completion would have to be carried out industrially on the basis of his specifications, since it is not the province of the scientist to solve problems of material procurement.

4. Dr. Winter (fnu), of the VEB Transformatoren- und Roentgenwerk Dresden (TRAFO), however, is very sceptical of the project and maintains that the theory of the iron-free betatron remains to be subjected to actual tests. Although Jena had no facilities with which to make such an experiment, positive results were achieved in Dresden. Technical data for the planned 30 mV betatron were submitted to the Technical-Physical Institute of the University of Jena, after ZAFT (the Central Office for Research and Technology) had assigned this research work to Jena.

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